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Balancing Problems of Independent Milk Dealers Operating Small and Medium Size Plants

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AGRICULTURAL EXPERIMENT STATION
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This is part of a Northeast Regional Project, NEM-13, "The Production-Consumption Balance and Efficient Utilization of Milk for Non-Fluid Uses in the Northeastern Milksheds," a cooperative study involving Agricultural Experiment Stations in the Northeastern Region and supported in part by regional funds and funds from the Agricultural Marketing Service, United States Department of Agriculture.

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"Balancing Problems of Independent
Milk Dealers Operating Small and
Medium Size Plants"

Correction

The following change should be made on page 7 of Station Bulletin 460:

the last line in the fourth paragraph to read "milk through other market channels only when necessary".

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Foreword and Acknowledgments

The present study was undertaken as a part of the regional research project entitled "The Production-Consumption Balance and the Efficient Utilization of Milk for Non-Fluid Uses in the Northeastern Milksheds". Four states in the Northeast region cooperated in this supporting project. They were Vermont, New Hampshire, Massachusetts, and West Virginia.

Data were collected under the supervision of the technical committee representatives of the cooperating states, viz., Fred C. Webster, Vermont Agricultural Experiment Station; J. R. Bowring, New Hampshire Agricultural Experiment Station; H. G. Spindler, Massachusetts Agricultural Experiment Station; and J. H. Clarke, West Virginia Agricultural Experiment Station. The author wishes to express his appreciation to these technical committee members for their assistance in the preparation of this report. Errors in fact or interpretation are, of course, the responsibility of the author alone.

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* Members of the Executive Committee during the pre-publication period of this report.

Summary and Conclusions

The profitable utilization of milk receipts in alternative outlets is a problem for all milk dealers. The problem arises because consumer purchases of fluid milk are relatively uniform throughout the year while milk production varies widely from one season to another. Milk dealers therefore have a difficult problem in maintaining a close balance between milk receipts and fluid sales. This problem is particularly serious in the northeast dairy region where milk sold for fluid uses brings much higher returns than milk used in manufacturing.

Independent milk dealers operating small and medium size plants have less flexible operations and more restrictive outlets for milk than do large, multiple plant firms. Because of this it was assumed that small independent plants might operate most profitably by maintaining a very close balance between milk purchases and fluid sales.

This study was designed to ascertain for small independent milk dealers the relative importance of the methods of balancing used and reasons for preferring the most commonly used method. The data were obtained by individual interviews with 201 milk dealers in four of the northeast states and from related published material.

The problems of operating a small independent fluid milk processing plant were found to be similar irrespective of whether the plant was located in a surplus producing state or a deficit area. The study disclosed no relationship between the percentage of surplus handled and the location of the plant, the seasonal pattern of receipts in the area, or the total surplus within the state where the plant was located.

To ascertain the method of balancing preferred by a dealer and his reasons for preferring that method, an attitude analysis was made using the scalogram technique. It was found that most independent milk dealers (78.5 per cent) preferred to maintain a very close balance between milk receipts and fluid sales throughout the year. The primary reason for this preference was that these dealers considered this the most profitable way in which to balance. The analysis showed that about 97 per cent of the dealers were of the opinion that this type of balancing was most profitable. However, market restrictions or regulations and personal factors accounted for the disparity between the method they preferred to use and the method they believed to be most profitable. Thus, in spite of the fact that about 18 per cent of the dealers were favorable to maintaining a close balance between receipts and fluid sales because it was more profitable, market restrictions and personal factors influenced them against attempting to balance receipts with fluid sales. The presence of manufacturing facilities in a dealers' plant did not influence his preference for a particular type of balancing.

An analysis of the balancing operations actually used by these dealers supported the findings of the attitude investigation reported above. Of the 201 dealers studied, 167 attempted to maintain a close balance between receipts and fluid sales. Of these 167 dealers, eighteen per cent were able to balance producer receipts with fluid sales without outside sales or purchases. Most of the remaining dealers in this group attempted to balance producer receipts with fluid sales as much as possible and then purchased

or sold milk through other dealers. The quantities of milk involved in these buying and selling transactions were usually small. Relatively few dealers followed a planned program of "buying short" or "buying long."

Information obtained on prices received for milk sold to other dealers and prices paid for milk purchased from other dealers indicated the poor bargaining position of independent dealers. Prices received were usually the manufacturing price less handling charges and the cost of transportation. Prices paid for milk purchased from other dealers were the current fluid milk price plus charges for handling and transportations.

A large part of the milk which was not sold locally as fluid milk or milk drinks was separated. Most of the cream separated was sold on dealers' routes for local consumption. Relatively little skim milk was used for fluid sales and much was wasted.

A separate study was made of the 34 dealers who did not attempt to balance receipts with fluid sales. These dealers, generally, operated very small plants. Half of them were producer-dealers and with only one exception handled milk from their own herd's production exclusively. The remaining dealers in this group who obtained their milk primarily from producers had special arrangements for the profitable handling of excess milk. Ownership of manufacturing facilities was not related to the method of balancing followed by these dealers.

The problem of balancing for independent milk dealers does not appear to be serious in total volume. The quantities of surplus are usually small. The evidence suggests that the best method of operation would be for independent dealers to obtain the most uniform supply of producer milk possible; limit their business to fluid products for local consumption; and sell or buy milk price plus charges for handling and transportation.

A considerable amount of space has been devoted in this report to the technique used to measure the attitudes of dealers toward balancing. It is felt that this is justified on the grounds that the technique is relatively new and provides the most reliable and valid method available for attitude measurement. The analysis of the balancing methods currently in use followed the direction suggested by the attitude investigation. Scalogram analysis appears to be a suitable method of inquiry for ascertaining how and why a firm decides to use a particular operational procedure.

Balancing Problems of Independent Milk Dealers Operating Small and Medium Size Plants

Arthur D. Jeffrey*

An economic problem in the handling of milk by independent milk dealers operating small and medium size plants develops from their attempt to maintain a close balance between their purchases from producers with the quantities needed for fluid sales. The seasonal variation in receipts from producers and the relative uniformity in fluid sales of these single plant firms results in a shortage of milk during certain times of the year and a surplus at other times.[1] It appeared that the independent nature, small size, and relatively large number of these plants places them in a poor bargaining position for the sale of excess milk or for the procurement of milk in times of shortage. For this reason the present study was initiated to determine:

1. What policies and methods of balancing milk supplies with fluid sales are used and which of these appear to be most desirable for independent dealers operating fluid milk plants of small and medium size.
2. What factors influence a dealer's decision in the method used to balance milk supplies with fluid sales.

Method of Study

The procedure used in the study was to ascertain by personal interview the reasons why dealers do or do not use particular methods of balancing milk receipts with fluid sales and then to analyze the procurement and disposal policies to see if the reasons conform with their actions. It was assumed that the attitudes held by these dealers toward a particular type of balancing was an expression of their reason for the method used. Thus, the reasons for a particular balancing operation were investigated by a measurement of attitudes.

A survey was made of 201 milk dealers in four northeastern states, namely, Vermont, New Hampshire, Massachusetts, and West Virginia during 1956 and 1957. The answers to the attitude questions were analyzed by the scalogram technique.[2] This measure permitted a determination of the factors

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[1] Variations in daily and weekly receipts and fluid sales may result in a temporary shortage or excess of milk but such variations are not investigated in this study.

[2] Stouffer, Samuel A., et. al., *Measurement and Prediction*, Vol. IV, Studies in Social Psychology in World War II, Princeton University Press, 1950.

which conditioned their decision to use a particular method of balancing. Information on the present methods of buying and selling milk was obtained, partially from this survey and also from information obtained in the initial phase of the regional study which considered the production-consumption balance of milk in the northeast region.[3]

An Explanation of Terms and Categories

The term balancing is used in this study in two connections. One is used to mean the equating of receipts from all sources with the sale or disposal of these receipts, excepting daily and weekly variations. The other is used to mean the equating of receipts from all sources with fluid sales alone. In this latter connection milk and milk products not included in fluid sales are considered as surplus.

The criteria of classifying milk products as fluid sales or surplus is based primarily on the method of disposal. For example, bottled products sold on dealers' retail and wholesale routes (including platform sales) are fluid sales. This includes fluid whole milk, fluid skim milk, fluid cream and flavored milk and milk drinks. Surplus milk would consist of fluid whole milk, fluid cream or skim milk sold to another dealer, milk or cream used in manufacturing, or dumped skim milk.

Manufacturing facilities include the equipment needed for processing surplus milk such as the manufacture of ice cream and butter. Cottage cheese is made in these plants to meet local demand, but more accurately it is a by-product of the separation process. Inasmuch as the local demand for this product is usually small and considerably less than the quantity of skim milk available for processing, it is considered a surplus product.

The Statewide Surplus Problem

The magnitude of the surplus problem in the four states studied for the year 1954 is shown in Table 1. This tabulation shows the total quantities of producer milk received at plants (including receiving stations for outside markets) and the sales of fluid milk within the state.

Two of these states, Vermont and New Hampshire, were surplus producing. The quantity of market milk supplied by producers to plants located within the state exceeds the quantities used for fluid purposes. The other two states were deficit producing areas.[4] The quantity sold for fluid use within the state exceeds the milk supplied by producers. Since fluid sales are relatively uniform throughout the year, the amount of variation in the

[3] Jeffrey, Arthur D., The Production-Consumption Balance of Milk in the Northeast Regions, Northeast Regional Publication No. 29, A.E. 1055, Cornell University Experiment Station, June 1957.

McAllister, C. E., Vermont's Milk Dealers, Vermont Agricultural Experiment Station Bulletin 594, June 1956.

Bowring, J. R., Production and Utilization of Milk By-Products in New Hampshire, University of New Hampshire, Agricultural Experiment Station Bulletin 441, June 1957.

[4] West Virginia has an annual surplus, but does not produce sufficient milk in November to meet fluid needs.

Table 1 Plant Receipts of Market Milk and Quantities Used as Fluid Milk Within the State, Four Northeastern States, 1954*

States	Receipts from Producers	Fluid Use Within the State†	Per Cent Fluid Use Within the State	Per Cent of Fluid Requirements Produced Within the State
	(thousand pounds)	(thousand pounds)		
Vermont	1,481,508	87,505	5.9	—
New Hampshire	315,375	120,912	38.3	—
Massachusetts	788,856	1,622,454	—	48.6
West Virginia	357,712	316,419	88.5	—

* Source: *Ibid*, Jeffrey, A. D., Production-Consumption Balance of Milk in the Northeast Region.

† Includes fluid cream.

monthly receipts from producers is the primary problem in balancing milk receipts with fluid sales.

The study of the production-consumption balance in these states indicated that monthly receipts from producers were more seasonal in the two surplus producing states than the states of Massachusetts and West Virginia, Table 2. This suggested that the problem of balancing receipts to fluid sales of independent milk dealers might be different in surplus producing areas (greater seasonality) than in deficit producing areas (relatively uniform monthly production).

Table 2 Seasonal Indexes of Receipts from Producers shown as a Percentage of the Low Month of Production to the High Month of Production, Four Northeastern States, 1954*

States	Low/High Ratio†	Production Classification
Vermont	60	Surplus
New Hampshire	69	Surplus
Massachusetts	77	Deficit
West Virginia	74	Deficit

* Source: *Ibid*, Jeffrey, A. D., The Production-Consumption Balance of Milk in the Northeast Region.

† A low to high ratio of 70 or more is taken to be an indication of relatively uniform production.

However, the existence of a seasonal surplus or a seasonal deficit of milk on a statewide basis need not mean that an individual dealer has a deficit or a surplus operation. To ascertain the actual situation regarding balancing operations of independent dealers, the more detailed survey of individual dealers which constitutes the remaining part of this bulletin was undertaken.

Description of the Dealers

A total of 201 independent milk dealers was interviewed in 1956 and 1957 in four northeast states with respect to their balancing operations, Table 3. The majority of these interviews was made in New Hampshire.

In all of the states some form of state or federal regulation which affected the price paid to producers for milk was in existence. In addition, minimum resale prices were established by state regulation in Vermont and New Hampshire. However, twelve of the West Virginia plants included in the survey were not under any form of price regulation. These differences were considered in the analysis made of dealers' attitudes and on their methods of balancing

Table 3 Size of Plants by Daily Average Sales of Fluid Milk of 201 Independent Milk Dealers, Four Northeastern States, 1956-1957.

States	Number of Dealers	Range in Plant Size Largest	Smallest	Daily Average Sales
		(quarts)	(quarts)	(quarts)
Vermont	27	4,000	150	1,309
New Hampshire	119	16,000	100	1,694
Massachusetts	26	4,000	500	2,221
West Virginia	29	35,500	500	4,378

The daily average sales of milk of these independent plants were about the same in all of the three New England states. On the average, plants in West Virginia were twice as large as in any of the New England states. While some of the plants in West Virginia were relatively large it was assumed that with respect to the problem of balancing their independent nature (single plant firm) placed them in the same category as the New England plants.

Source of Receipts

The major source of supply for these dealers was from their own production (producer-dealer) or from other producers, Table 4. Only three of the dealers interviewed obtained their milk entirely from other dealers.

About 59 per cent of the dealers obtained all of their milk supply directly from producers or from their own herd's production. The remaining 41 per cent purchased some milk from other dealers. An indication of the quantities of milk received at plants from these sources was obtained from the Vermont study and from unpublished data obtained from West Virginia and Massachusetts. In Vermont 93 per cent of the milk handled by dealers of small and medium size operations was from their own herd's production or other producers.[5] Only 7 per cent was from other dealers. In West Virginia the

[5] *Ibid,* McAllister, C. E., Vermont's Milk Dealers.

Table 4 Source of Milk Supply for 201 Independent Milk Dealers, Four Northeastern States, 1956-1957.

Source	Number of Dealers	Per Cent of Total
Producers only	55	27
Producers and other dealers	51	25
Own herd production	33	16
Own herd production and other dealers	14	7
Own herd production and other producers	32	16
Own herd production, other dealers and other producers	13	7
Other dealers only	3	2
Total	201	100

relationship was 87 per cent producer milk to 13 per cent from other dealers. In Massachusetts, 90 per cent of total milk receipts was obtained from producers.

The size of operation (within the limits of the plants surveyed) appeared to be somewhat related to procurement practices, Table 5. In general, the smallest plants were those of producer-dealers.

Table 5 Source of Milk Supply for Independent Dealers Related to Size of Plant, 201 Dealers, Four Northeastern States, 1956-1957.

Source	Size of Plants (daily average sales in quarts) Under 1,000	1,000 to 1,999	2,000 to 2,999	3,000 and over
	(per cent)	(per cent)	(per cent)	(per cent)
Producers only	9	36	43	33
Producers and other dealers	19	26	14	38
Own herd production	34	4	0	5
Own herd and other dealers	12	0	7	2
Own herd and other producers	19	17	22	12
Own herd, other dealers and other producers	6	17	7	5
Other dealers only	0	0	7	5
Total	100	100	100	100

The largest plants tended to obtain a slightly larger part of their supply from other dealers. Most of the large volume dealers were located in the state of West Virginia. This relationship is probably a result of the availability of milk supply instead of size of operation. The large volume plants in West Virginia, a deficit production state, have historically purchased milk from dealers in other areas in periods of short supply.

Amount of Surplus

A relatively small surplus was carried by independent dealers in the four states, Table 6. The dealers in Vermont, a surplus production area, had the smallest percentage of surplus; probably due to the small volume size of these plants. The percentage of surplus in the other states was relatively uniform.

It seems logical to conclude that the independent nature of dealers in this study and the fact that they were primarily fluid milk processing plants were more significant factors in the amount of surplus than location, the seasonal pattern of receipts within the state, or the total surplus within the state.

Table 6 Average Annual Surplus Carried by Individual Plant Dealers, Four Northeastern States.

State	Year	Per Cent of Surplus*
Vermont	1953	4
New Hampshire	1957	12
Massachusetts	1955	14
West Virginia	1957	10

* Estimated by dealers or calculated from an average of the high and low months of production.

A comparison of the percentage surplus carried by these dealers with the source of their supply was made with information available from the New Hampshire study. This comparison showed that those dealers who obtained almost all of their receipts from producers had the greater percentage of surplus. The data indicated further that many producer-dealers were not successful in regulating their own production in line with fluid sales. These findings were substantiated by the data obtained from West Virginia.

Disposal of Surplus

Manufacturing facilities for the disposal of surplus milk were available in about 14 per cent of the plants in the New England states, Table 7. Over half of the plants in West Virginia had facilities for manufacture of ice cream and one plant was equipped with a churn for the manufacture of butter. However, only 20 per cent of all plants in the study had manufacturing facilities to utilize their surplus receipts.

Milk was separated into cream and skim by most plants, either for disposing of surplus or as a means of obtaining fluid cream for their customers. Ninety per cent of all plants surveyed had a separator. The range in the percentage of plants with a separator among the states was from 80 per cent in Vermont to 95 per cent in West Virginia. Much of the cream was used on retail routes to meet local demand (fluid sales).

Skim milk was a waste product for many dealers and was dumped down the sewer in many of the New England plants studied. The production of cottage cheese was the use most frequently mentioned by dealers as an im-

portant outlet of surplus skim milk. Seven per cent of the dealers in Vermont, six per cent in New Hampshire, and twelve per cent in Massachusetts reported that they made cottage cheese as compared with 65 per cent of the West Virginia dealers.

Table 7 Facilities for Manufacturing of Surplus Milk, Four Northeastern States, 1956-1957.

State	Number of Plants	Number of Plants with Manufacturing Facilities			Percent of Manufacturing Facilities
		Ice Cream	Butter	Total	
Vermont	27	3	—	3	11
New Hampshire	119	17	1	18	15
Massachusetts	26	3	—	3	12
West Virginia	29	15	1	16	55
Total	201	38	2	40	20

Attitude of Dealers Toward Balancing Milk Receipts with Fluid Sales

To explore the reasons why independent dealers of small and medium size operations choose to follow a particular procurement or disposal policy, it was assumed that a measure of their attitude toward the balancing of milk receipts with fluid sales would be related directly to their preferred method of operation. The "scalogram analysis" method was selected for the measurement of attitudes, as it has been demonstrated to be the most rigorous technique available for this purpose.[6] In as much as this is a relatively new technique and its application to problems in agricultural marketing has not been previously considered, some description of the method is incorporated in the following discussion.

Method of Analysis

The same attitude schedule was used in all cooperating states. The questions included were pretested by an individual plant survey of milk dealers in western New York State. The pretested questions were classified into four areas of content, namely, the general content area and three sub-areas of content which were termed economic, market restrictive, and personal.[7] The first group of questions related to the overall attitude of the dealers toward balancing receipts with fluid sales (general area). The second group of questions related to the cost and returns involved in such a balancing opera-

[6] Jeffrey, Arthur D., "An Application of Scalogram Analysis in Agricultural Economics Research", Journal of Farm Economics, Vol. XL, No. 2, May 1958.

[7] Area of content is the attitude area being measured as defined by the questions.

tion, i.e., profit maximization (economic area). A third group were questions which pertained to the influence of market regulations and restrictions on an operation which attempted to equate milk receipts and fluid sales (market restrictive area). The last group of content questions considered the dealer's personal reasons for liking or not liking this kind of balancing (personal area). The responses to the questions in these four content areas also were designed to measure how strongly the respondents felt about their attitude. In addition, questions were included in the schedule to measure the degree of decidedness in the attitudes of these dealers.[8]

Assuming the questions in each area would form reliable content scales and rank the dealers from more favorable to less favorable, the measure of strength of feeling would indicate the zero point of intensity (region of indifference) where the dealers shifted from favorable to unfavorable. The questions on decidedness would give a measure of the degree to which the three selected sub-areas — economic, market restrictive, and personal — influence the general content area.[9]

The Findings

Figure 1 shows diagramatically the final results of the attitude analysis for the general content area. In diagram "A", the decidedness component of an attitude is related to the general content area. Also shown, is the zero point of intensity (region of indifference) where the population shifts from unfavorable to favorable as determined by the intensity analysis. Diagram "B" is a schematic presentation of diagram "A" showing on a single line the content axis, the cutting and bending points of decidedness, and the zero point of intensity.

The attitudes of the 201 dealers toward balancing receipts with fluid sales can be taken as representative of all independent milk dealers of small and medium size. This assumption can be made since scalogram analysis tests the reliability of the dealer sample as well as the questions.

The general content area — Reading from diagram "B" of Figure 1, we find that 21.5 per cent of the dealers are not favorable to balancing receipts with fluid sales — the remaining 78.5 per cent are favorable. However, dealers in each of these two categories are not uniformly decided in their attitude. The 21.5 per cent who are unfavorable toward balancing receipts and fluid sales are all undecided in their attitude. Of the 78.5 per cent who are favorable toward balancing receipts and fluid sales, 18 per cent are undecided and the remaining 60.5 per cent are decided. The reasons why they are decided or undecided is resolved by an analysis of the three sub-areas — economic, market restrictive, and personal.

Reasons for the general attitude — The analysis which follows is based on a schematic presentation of the decidedness component related to the general content area and to the economic, market restrictive, and personal sub-areas of content, Figure 2. This relationship of the three sub-areas to the general content area permits an interpretation of the reasons for the general attitude toward balancing.

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[8] See Appendix I for a list of the questions used in the attitude scale. Since in scalogram analysis the questions define the subject area being measured, the term "social reasons" might describe better the area referred to above as personal area.

[9] See Appendix II for a description of the technique.

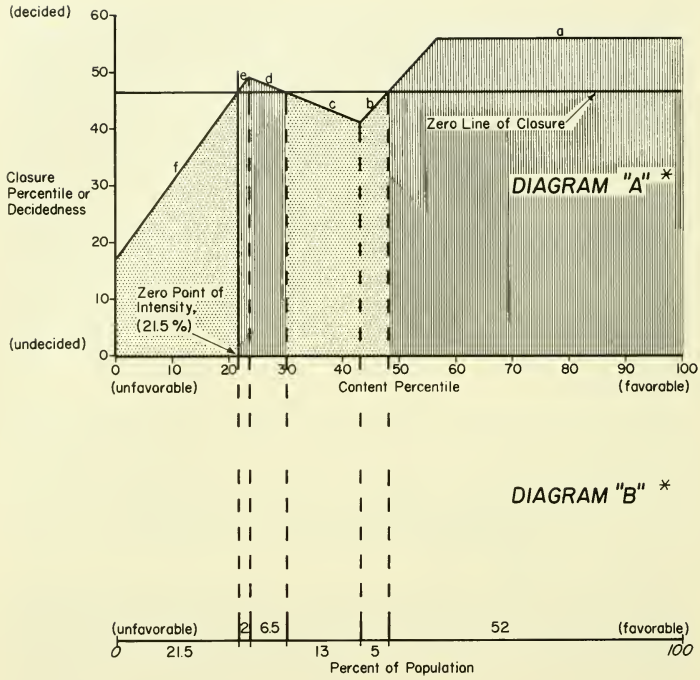


Figure 1 "Decidedness" Component of Attitude Toward Balancing Receipts with Fluid Sales. General Content Area. Four Northeastern States, 201 Respondents, 1956-1957.

* Diagram "A" shows the N shaped curve which results when decidedness (closure) is related to content. Diagram "B" is a schematic presentation of the same diagram with the cutting and bending points of closure and zero point of intensity indicated on the content axis. The numbers above the line indicate the percentage of respondents who were decided; numbers below the line are undecided.

The four content areas are represented by a horizontal line — each line consisting of the total sample population. The longest vertical line represents the zero of intensity or the point where the dealers shift from favorable to unfavorable; the short vertical lines represent the cutting and bending points of decidedness.

To make an interpretation of the figure, four groups of respondents were used. This breakdown was determined by considering the decided and undecided groups of the general content area. Moving from right to left or

from favorable to unfavorable the four groups in the general area consisted of 52, 18, 8.5, and 21.5 per cent of the population.[10]

Group 1 — This group, about 52 per cent of the population, were favorable and decided in the general content area toward balancing receipts and fluid sales. Figure 2 also shows that at least 41 per cent of the total population who were most favorable toward balancing receipts and fluid sales in the general content area, were favorable and decided for economic, market restrictive, and personal reasons. They had considered the basis for their general attitude in the three sub-areas and had reached a decision. An additional five per cent in Group 1 were favorable and decided for economic reasons only. (The lack of decision in the personal and market restrictive areas explains the slope of the curve for the general content area in Figure 1, Diagram A, section a, taking a sharp downward bend.) The remaining six per cent of the population who were favorable and decided in the general content area were favorable but undecided in an economic context; unfavorable and undecided in the restrictive sub-area; and unfavorable but decided in the personal sub-area. This decision in the personal sub-area indicates

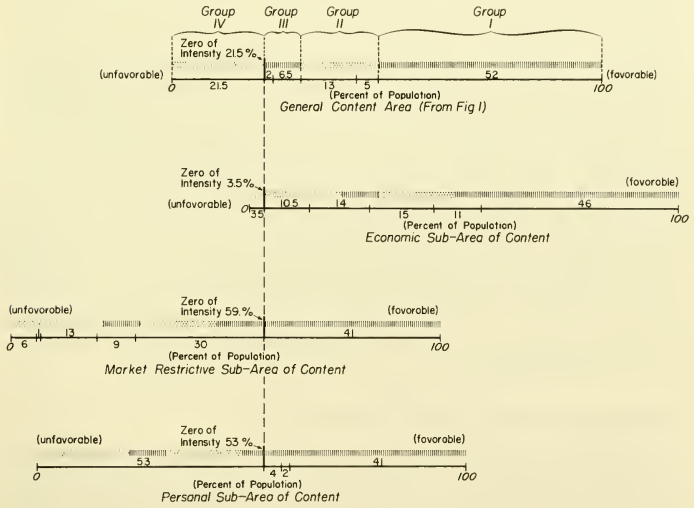


Figure 2 Schematic Presentation of Four Content Continua Showing the Zero Points of Intensity and the Cutting and Bending Points of Decidedness. Four Northeastern States, 201 Respondents, 1956-1957.

The numbers above the line indicate the percentage of respondents who were decided; numbers below the line are undecided:

[10] See Figure 1-A which shows how the areas under the curve were combined. In the diagram Group 1 is a, Group 2 is b and c, Group 3 is d and e, and Group 4 is f.

that they have given some thought to the problem, but are less favorable than others in this group because they are not sure that they want to balance receipts and fluid sales for economic reasons alone.

Group 2 — The next group consisted of the 18 per cent who in general were favorable to this type of balancing operation but undecided about their reasons. The major difference between members of this group and Group 1 is that they have not weighed the alternatives in the different sub-areas and therefore were undecided about the reason for wanting to balance milk receipts and fluid sales. They were certain that personal reasons were not sufficient justification, but undecided on the influence of market restrictions and economic factors. It may be that this group balances receipts and fluid sales because of custom, but has not considered why it is desirable.

Group 3. — The remaining group of 8.5 per cent whose members were favorable to balancing milk receipts with fluid sales in the general area were also decided in their preference for this type of operation. While they were not as strongly favorable as the previous two groups, they have given more thought to the question and have reached the decision that the personal and market restrictive sub-areas were not factors on which they would determine the issue. They have decided that economic factors are the only justification for balancing receipts and fluid sales.

Group 4 — The final group of 21.5 per cent were those who were unfavorable to this kind of balancing. The group was broken into two sub-groups to determine why they were unfavorable. About 18 per cent of all respondents were decided that for profit maximization, balancing milk receipts with fluid sales would be desirable, but they were just as decided that market restrictions may not make it a desirable procedure. Furthermore, they were decided that personal reasons do not encourage balancing receipts with fluid sales. This conflict of economic desirability and market restrictive and personal undesirability accounts for the undecided nature of the unfavorable response in the general content area. The remaining 3.5 per cent of all respondents were unfavorable to balancing on a fluid sales basis for economic reasons but were undecided. Likewise, they were undecided about their unfavorable attitude in the market restrictive sub-area. The uncertainty in their unfavorable attitude in both of these sub-areas accounted for the undecided nature of the general response.

Implications of the Attitude Investigation

In a business enterprise such as milk processing one would expect to find that profit maximization is a major reason for the method of balancing followed. The attitude analysis indicated that profit maximization was the most important factor influencing the attitudes of independent milk dealers. The investigation showed that 96.5 per cent of these dealers were of the opinion that it was more economical to balance receipts with fluid sales instead of selling milk to other dealers or manufacturing milk products. Market restrictions and personal preferences were factors sufficiently important to lower the percentage of dealers favorable to balancing receipts with fluid sales to 78.5 per cent.

Another finding that is not discernible from the information thus far presented was that ownership of manufacturing facilities had no influence on

dealers' attitudes. Table 7 of this report showed that the percentage of dealers in West Virginia who had manufacturing facilities was significantly greater than in the New England states. A separate attitude analysis was made, excluding data for West Virginia. It was found that the response patterns of the New England dealers alone was not significantly different (± 1 per cent) from the response patterns of all four states. This indicates that although there were many more plants with manufacturing facilities in West Virginia, dealers' attitudes were the same. Thus, the availability of manufacturing facilities did not influence dealers' favorable or unfavorable attitudes toward balancing.

Dealers Methods of Balancing

A major problem in an operation which attempts to equate receipts with fluid sales is the seasonality of milk production. To overcome this problem two methods are currently being followed. One method is to limit receipts from producers so that in the flush production season producers receipts just meet fluid requirements. During the balance of the year the dealer purchases from outside sources the difference between the quantity of milk received from producers and the quantity needed to meet fluid sales. This is frequently referred to as buying short. An alternative method is to purchase milk from producers in sufficient quantities so that producer receipts meet fluid requirements during the short period of the year (buying long). The surplus during the remainder of the year is sold at surplus prices wherever a market is found. The surplus milk in this case might be manufactured.

In the analysis of balancing methods used by dealers there were 167 who said they tried to balance receipts with fluid sales and 34 who said they did not. The analysis was therefore made by considering each group separately.

As few as 18 per cent of the 167 dealers who were attempting to balance receipts with fluid sales indicated that they were able to obtain an even supply of milk from producers, Table 8. Thus, 82 per cent of the 167 dealers had to buy milk in short supply periods or sell or manufacture their surplus.

Table 8 Methods of Balancing Used by Independent Milk Dealers who Attempted to Balance Receipts with Fluid Sales, Four Northeastern States, 167 Dealers, 1956-1957.

Method of Balancing	Number of Dealers*	Per Cent of 167 Dealers*
Obtain uniform supply from producers	30	18
Buying excess producer milk and selling to another firm (buying long)	35	21
Buying insufficient producer milk and buying from another firm (buying short)	10	6
Both buying long and buying short	104	62

*It is obvious that there are more responses as to the type of balancing than the number of dealers (179 responses from 167 dealers). This occurred because some of the dealers who obtained a uniform supply of milk from producers occasionally purchased or sold small quantities.

The most common plan of operation was to adjust producer receipts as much as possible and then to buy small quantities when short of milk and to sell the surplus to another dealer when excess milk was on hand. Of the 167 dealers, 35 or 21 per cent made a definite practice of buying sufficient milk from producers in the low production periods and selling the surplus as milk to another plant in periods of excess production. Only 6 per cent of the dealers operated by limiting producer receipts in the flush season to the quantity needed for fluid sales.

Outlets for Surplus Milk

More dealers balanced (in the general sense) by selling or manufacturing their surplus (buying long) than by limiting the purchase of producer milk and buying from other dealers when in short supply. Manufacturing at their own plant was the least used method of surplus disposal, Table 9. Separating was the most common method of handling milk not sold as fluid milk or milk drinks.

Table 9 Methods of Disposal of Surplus Milk Reported by Dealers in Four Northeastern States who were Attempting to Balance Milk Receipts with Fluid Sales, 167 Dealers, 1956-1957.

Method of Disposal	Number of Dealers Reporting	Per Cent of 167 Dealers
Manufacture	28	17
Separate	142	85
Sell as milk to another plant	112	67

The results of individual state studies of two of these states show that on a volume of milk basis, selling cream locally was the most important outlet for separated milk for plants supplying local markets.[11] In Vermont during 1953, 87 per cent of the milk not sold in other fluid forms was in the form of cream for local consumption. In the state of New Hampshire, data collected in 1955 show approximately 70 per cent of the milk not used as fluid whole milk was disposed of locally as fluid cream.

The separating process leaves a large quantity of skim milk which must be utilized. With little exception, this product is a surplus commodity. Some is used as fluid skim, but most of it is used for cottage cheese, dumped or fed to livestock. The study made in Vermont indicated that approximately 36 per cent of the skim milk separated was used as non-fat fluid milk. The remaining 64 per cent was used either as cottage cheese (less than 13 per cent), dumped and used as livestock feed or unaccounted for in the dealer's records. A somewhat different situation existed in New Hampshire in 1955 in skim utilization. Only about 13 per cent of the skim milk was sold on

[11] *Ibid*, McAllister, C. E., Vermont's Milk Dealers.
Ibid, Bowring, J. R., Production and Utilization of Milk By-Products in New Hampshire.

retail routes, and a larger proportion, 44 per cent, was used as cottage cheese. The quantity dumped or used as feed for livestock was approximately 30 per cent. The report from New Hampshire also indicated a relationship between the size of the operation and utilization of the skim. In the large plants, 66 per cent of the skim milk was used as cottage cheese or sold on retail routes. Only 18 per cent was dumped or sold as livestock feed. In the case of the small plants, approximately 90 per cent of the skim milk was dumped or fed to livestock.

Of the 167 dealers who were attempting to balance receipts with fluid sales, 28 had manufacturing facilities. Two of these dealers had a butter churn in addition to facilities for ice cream manufacture. Twelve of the dealers with manufacturing facilities or 40 per cent of the 167 who were attempting to balance were located in the state of West Virginia.

The analysis of methods used by dealers who attempted to balance milk receipts and fluid sales showed that 27 per cent had a planned program of "buying short" or "buying long". The remaining 73 per cent tried to balance producer receipts with fluid sales as much as possible. All but 18 per cent of them, however, had to do some buying and selling. While 85 per cent of the dealers did some separating this was not a surplus disposal program but was primarily for local sales of fluid cream.

Prices of Milk — Other Dealer Transactions

Information on the prices received for milk sold or prices paid for milk purchased from other dealers was difficult to obtain. Many dealers did not wish to divulge information of this nature. The data that were obtained can only be considered as an indicator of how the pricing mechanism operates. The prices obtained related only to sales and purchases of fluid whole milk, Table 10. The responses tabulated include dealers in the states of Massachusetts and West Virginia who were attempting to balance receipts with fluid sales but found it necessary to either purchase or sell milk with other plants. In nearly all cases the prices were given in relation to the classified prices which prevailed at the time the transactions were made.

Table 10 Prices Paid and Prices Received for Milk Received and Sold to Other Plants, Twenty-three Respondents in the States of Massachusetts and West Virginia, 1956-1957.

Prices Paid for Milk Purchased from Other Plants*	Number of Dealers	Prices Received for Milk Sold to Other Plants†	Number of Dealers
Class I less $.01	1	Class II less $.11 to .25	2
Class I	4	Class II less .01 to .10	3
Class I plus .01 to .10	4	Class II	7
Class I plus .11 to .25	2	Class II plus .01 to .10	2
Class I plus .26 or more	3		

*F.O.B. Seller's Plant
†F.O.B. Buyer's Plant

The table above indicates that dealers of small and medium size plants are in an unfavorable price position either for buying or selling milk. Part of their problem is that they are purchasing milk from other plants when there is a scarcity of producer milk and selling in periods of surplus. Also the relatively small quantities involved do not make them desirable sources of supply for milk manufacturers. Thus, even under classified pricing they must assume the cost of transportation and handling.

Information obtained in the Vermont study made in 1954 supports the data in Table 10. McAllister found that in purchasing milk from other dealers "nearly all of the prices were based on either the Boston Class I price or the state inter-dealer price. About 74 per cent of the (163) dealers used one of those prices as a base, with a handling charge added."[12]

The information obtained on prices supports the finding of the attitude investigation that the purchase of milk from other plants in periods of shortage or the selling of surplus milk to other plants is a more expensive way to balance than by obtaining a uniform supply of milk from producers. It would appear that independent milk dealers can afford to pay substantial premiums to producers who would deliver a uniform supply of milk throughout the year.

An attempt was made to determine if the 34 dealers who did not want to balance receipts and fluid sales had some factors in common. It appeared that size of plant was associated with a desire to balance or not to balance. A great many small plants were in this unfavorable group. However, examination showed that the method of procurement was probably a more important factor than size, Table 11.

One half of all these dealers were small producer-dealers. Since most of them used only their own herd's production, their only way of balancing receipts and fluid sales was to regulate their own production. This they were unable to do.

The larger plants obtained their receipts for the most part from producers or from producers and other dealers. In these cases special circumstances seemed to rule their decision toward balancing. For example, in two plants

Table 11 Comparison of Size of Plant and Procurement Practices of Dealers not Attempting to Balance Receipts and Fluid Sales, 34 Dealers, Four Northeastern States, 1956-1957.

Source	Size of Plants (daily average sales) Under 1,000	1,000 to 1,999	2,000 and over	Total
		quarts		
Own herd production	16	0	0	16
Own herd and other dealers	1	1	1	3
Producers only	1	2	7	10
Producers and other dealers	1	0	4	5
Total	19	3	12	34

[12] *Ibid*, McAllister, C. E., Vermont's Milk Dealers, Page 14.

where price information was obtained on sales of milk to other dealers it was found that they operated in a deficit area and were able to obtain premiums of one to 10 cents per hundredweight above the Class I price in the area. In other cases special "deals" were made with plants belonging to a federal order market so that any surplus could be sold without financial loss. In two instances, summer resort businesses changed the consumption pattern so that periods of short supply coincided with the normally flush production period.

The analysis of dealers who did not attempt to balance receipts and fluid sales supports the attitude investigation. In a few cases, they were able to maximize returns by not balancing. In the majority of cases personal factors or special situations related to the market structure influenced their decision.

APPENDIX I

General Content Area:

1. Do you think that balancing receipts to fluid sales is the best method to use in operating a fluid milk business?

1. It is the very best method.
2. It is probably the best method.
3. Undecided.
4. It is probably not the best method.
5. It is definitely not the best method.

2. One aspect of the milk business that is annoying is that receipts from producers are not uniform throughout the year.

1. Strongly agree.
2. Agree.
3. Undecided.
4. Disagree.
5. Strongly disagree.

3. Would you like to have producer receipts equal your fluid sales?

1. Strongly agree.
2. Agree.
3. Undecided.
4. Disagree.
5. Strongly disagree.

4. I like balancing because it is the most convenient way of handling milk for a small dealer.

1. Strongly agree.
2. Agree.
3. Undecided.
4. Disagree.
5. Strongly disagree.

Economic Content Area:

5. I like to have more than enough producer milk to meet my fluid needs at all times since milk from other sources is too expensive.

1. This is always true.
2. Most of the time this is true.
3. This is true only some of the time.
4. This is *never* true.

6. The *one* thing that I don't like about balancing is that is costs too much money.

1. Strongly agree.
2. Agree.
3. Partially agree.
4. Undecided.
5. Partially disagree.
6. Disagree.
7. Strongly disagree.

7. I feel that the costs of handling excess milk are so high that there is no profit in it.

1. This is a correct statement.
2. Handling costs are one reason but not the most important one.
3. Handling costs are not a factor.

8. Do you think that balancing milk receipts with fluid sales is the most profitable way to operate as a fluid milk dealer?

1. Definitely.
2. Probably.
3. Don't know.
4. Probably not.
5. Definitely not.

Restrictive Content Area:

9. I do not like balancing but do it because of market restrictions such as local health regulations or marketing orders.

1. Strongly agree.
2. Agree.
3. Undecided.
4. Disagree.
5. Strongly disagree.

10. In my opinion, price regulations under which some markets operate are a reason why fluid milk dealers balance receipts to fluid sales.

1. Strongly agree.
2. Agree.
3. Don't know.
4. Disagree.
5. Strongly disagree.

11. Suppose you had a different outlet for excess milk than the one you now have, would you change your present policies of procurement?

1. Yes.
2. Don't know.
3. No.

12. If a change were made in marketing regulations so that you could sell surplus milk to a plant without being penalized price-wise would you continue to balance?

1. No, I would not continue.
2. I don't think I would continue.
3. Don't know.
4. Yes, I would continue.

Personal Content Area:

13. Do you feel that there is a better way of handling milk than by balancing receipts to fluid sales?

1. Yes.
2. Don't know.
3. No.

14. If I did not balance receipts with fluid sales it might upset my relations with farmers.

1. Yes, it would upset my relations with farmers.
2. It might upset my relations with farmers.
3. Don't know.
4. It would probably not upset my relations with farmers.
5. No, it would not upset my relations with farmers.

15. In my opinion if I did not balance supplies with fluid sales it would cause friction and instability in the local market.

1. I am certain that it would cause friction and instability.
2. I believe it would cause friction and instability.
3. Don't know.
4. I believe it would have no effect in the market.
5. I am certain it would have no effect in the market.

16. If I changed to a manufacturing operation to handle surplus milk it would cause a breakdown in relations with farmers.

1. Strongly agree.
2. Agree.
3. Don't know.
4. Disagree.
5. Strongly disagree.

Closure (Decidedness):

17. There are many reasons why dealers might attempt to balance producer receipts and fluid sales: personal reasons, economic reasons, laziness, other interests, market restrictions, etc. Is there any one reason that you think is most important?

1. No one reason is more important than any other.
2. Perhaps there are some reasons that are more important than others.
3. Some reasons are much more important than others.
4. One of the reasons is by far the most important.

18. Do you ever worry about whether your method of balancing is the best?

1. I never worry about it.
2. I worry about it sometimes.
3. I worry about it a great deal.
4. I worry about it all the time.

APPENDIX II

Scalogram Analysis

The principal of scalogram analysis is one of ranking people from more favorable to less favorable in their attitude toward something. The ranking is made by their responses to a series of questions, each response being considered as a separate item. The rank order must have a special cumulative property such that all persons who answer a given question favorably must have higher ranks than persons who answer the same question unfavorably. Such a ranking is called a perfect scale because it has the property of perfect internal consistency.

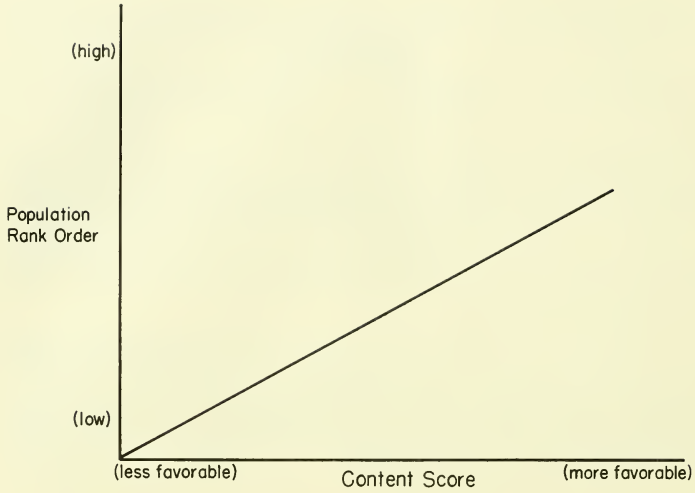
Assuming that the universe of content (the subject which is being measured) is made up of a series of questions favorable in nature, the above definition of a perfect scale leads to a parallelogram response pattern. Consider a hypothetical example of three questions from a content universe, A, B, and C, each question graded in degree of favorableness from more favorable to less favorable with the response categories dichotomized into "yes" (A_1, B_1, C_1) and "no" (A^2, B^2, C^2) answers:

Respondent Number	Rank Order of Respondents	Type of Category (Item Response) Replies "yes" to question			Replies "no" to question		
		A_1	B_1	C_1	A_2	B_2	C_2
1	4	x	x	x			
2	3		x	x	x		
3	2			x	x	x	
4	1				x	x	x

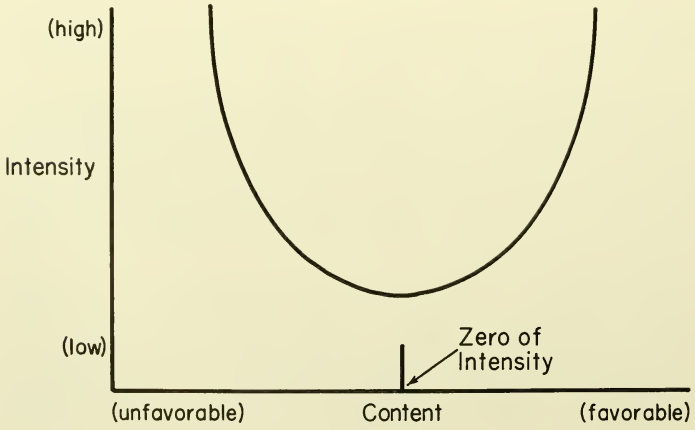
If a scale exists according to the above definition, there are only four possible response patterns. A person who checks A_1 must also check B_1 and C_1: a person who checks B_1 must also check C_1 and A_2: and so forth. The resulting parellelogram arrangement is called a scalogram and ranks the population from more favorable to less favorable toward something. This rank order is a linear function of the scores assigned to each item. Thus, if the population rank order is related to the scores assigned to the answer responses, the higher the rank the higher will be the score as shown in the chart at the top of page 28.

The relationship between the population rank and the content score is the first component of an attitude. The first component does not determine if the population under study is favorable or unfavorable to the content area, but only that they rank from more favorable to less favorable.

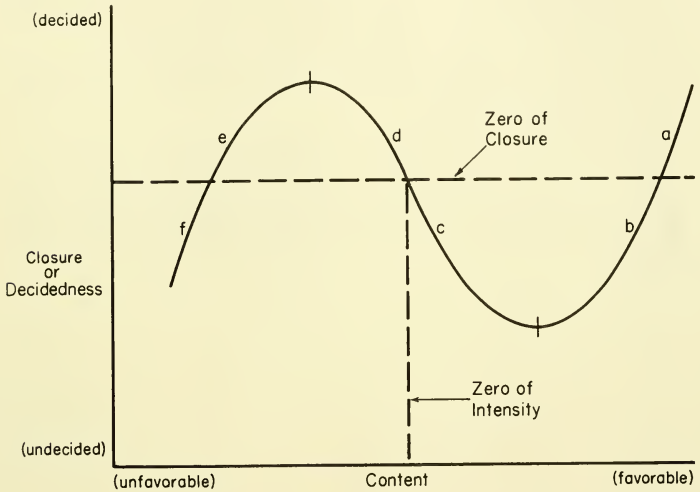
The technique does allow, however, a determination of the proportion of the population favorable or unfavorable by an intensity analysis. Intensity is the second component of an attitude. By relating the rank order of content



to the intensity of the responses, the point where the population shifts from favorable to unfavorable may be located. This point is the region of indifference or the zero of intensity. The intensity component is itself scalable in the same manner as the rank order of content. As people have ranks farther and farther to the right of the zero point they become more and more favorable and therefore more and more intense. Conversely, as the ranks move farther and farther to the left, they become more unfavorable and also more intense. A correlation between the content scale and the intensity scale will ideally result in a U or a J shaped curve:



Finally, the third component of an attitude known as closure, which measures the decidednes of an attitude, can be ascertained. This is accomplished by relating a set of questions which ask how decided the person is about his feeling to the content universe. Geometrically the plotting of closure to the content universe will result in an N shaped curve. With the zero line of closure established, six discernible degrees of decidedness will be found on the content axis. The zero line cutting the population into decided and undecided segments as follows:



The six psychological types that result are:

Type	Content	Closure
a	Favorable	Decided
b	Favorable	Undecided
c	Favorable	Undecided
d	Unfavorable	Decided
e	Unfavorable	Decided
f	Unfavorable	Undecided

The interpretation of the psychological meaning of these types is based on a consideration of alternatives. A decided person is one who has considered alternatives and has reached a decision. An undecided person has not considered alternatives sufficiently so that a decision can be made. A person who has not considered alternatives at all will be undecided and prejudiced and therefore will be most unfavorable to the content area.

The most favorable with respect to its attitude toward the content area is type a. These people are not only favorable but they have made up their minds as to why they are favorable. They have considered other alternatives and have reached a decision.

The second type, b, is not as strongly favorable and also has not decided the issue. The people who comprise this type have not fully decided on their plans.

Type c shows the same psychological relationship as b but is less favorable. This type likewise has not reached a decision but finds its attitude toward the subject area less tenable than the previous type. They would prefer to have an alternative, but do not know what it would be.

The next psychological type is unfavorable to the attitude area, type d. Because this type is decided, it has considered alternatives and believes that the alternatives are preferable.

Type e is likewise unfavoarble and decided, but because it is more unfavorable, it has reached a decision as to which alternative it prefers.

The last type, type f, while more unfavorable than any of the preceding types, is undecided. This type is more unfavorable because it has no other alternative and therefore is the most prejudiced against the attitude area. Being without any alternative is the most extreme state of an unfavorable attitude.